M E 433	Professor John M. Cimbala	Lecture 26
IVI L <b>-</b> 33		Lecture 20

## Today, we will:

- Continue discussing gravimetric settling in ducts well-mixed settling approximation
- Re-visit the Gaussian plume model, but with particle settling included in the analysis
- If time, begin discussing **inertial separation** (particles in curved flows)

## Example: Removal Efficiency due to Well-Mixed Gravimetric Settling in a Duct

**Given**: Dusty air enters a horizontal duct of length L = 14.4 m and height H = 6.0 cm at average speed U = 0.20 m/s. Aerosol particles of a certain diameter  $D_p$  under consideration have a terminal settling speed of  $V_t = 0.00025$  m/s.

**To do**: Calculate the removal efficiency E for these particles. Assume well-mixed settling, and assume that all particles that hit the floor of the duct remain there (they stick to the floor). Give your answer as a percentage to two significant digits.

## **Solution**: